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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering

M O N T H L Y N E W S L E T T E R

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: All compensation commission forms should be submitted to the Washington Office in duplicate, in order that there may be on file in the Bureau a complete history of each case.

L. A. Jones, C. E. Ramser, and F. E. Hardisty represented the Bureau at a conference of the cooperating agencies for the Northwest Appalachian Soil Erosion Station held on December 2 and 3 at Zanesville, Ohio. The Bureau of Chemistry and Soils, the Ohio soil survey, the Ohio agronomy department and the Ohio extension service were also represented. Plans for the new station at Zanesville were discussed. Mr. Ramser later spent two weeks in the Washington office preparing a detailed program of experiments for the Zanesville station and conferring with Department officials relative to work at other stations under his direction.

A comparison of the efficiencies of tile drains and mole drains in peat soils is being made by B. S. Clayton at Belle Glade, Fla. The water level in the outlet ditch will be controlled at different levels by means of a pump, and the effect on the water table noted by observation wells.

Fifteen miles of ditches involving about 50,000 cubic yards of excavation have been cleaned in the cooperative experiments being conducted by W. D. Ellison in Delaware. About 10 1/2 miles of ditches have been cleaned with the tractor and scoop, and cost compared with those obtained by using dynamite, horses and slips, dredge, and hand labor. Small log dams were constructed at the outlets of lateral ditches to prevent them from eroding and depositing sediment in the main channel. Sodium chlorate was used as a spray to control the growth of vegetation on the banks. About 90 per cent of the weeds were killed by one application. In one mile of ditch as many as six fences obstructed the channel. These have been removed and where necessary overhead swinging gates were constructed.

D. L. Yarnell and his assistants have been making transparent Pyralin pipe, 6 inches inside diameter. Bends of different designs including standard 90° elbows of different radii, abrupt right angle bends, bends of variable radii and others of special design are being constructed. These will be tested to determine the hydraulic laws governing the flow of water and the velocity and direction of flow.

H. O. Hill has completed the survey of a 40-acre field leased by the State experiment station near the Temple soil erosion farm on which a cultivation experiment on terraced land will be conducted. In this experiment the cultivation of row crops on terraced land by two methods will be studied. The field will be divided and both parts will be terraced in accordance with the best practices. On one part the rows

will be run parallel to the fence and on the other part they will follow the terraces. The crop yields, costs of cultivation, and costs of terrace maintenance will be compared for the different parts of the fields to determine the relative advantages of running the rows in different ways.

A survey of the Vollmer farm near Alma, Wis., comprising about 400 acres, has been made by G. E. Ryerson. A number of large gullies are destroying the tillable land of this farm. One such gully just starting was described as "40 feet wide, 25 feet deep,and 300 feet long and two laterals 15 feet deep and 100 feet in length are forming. From the condition of the banks and the bottom it is apparently growing very rapidly."

At a conference which W. W. McLaughlin held with the Texas Board of Water Engineers, it was decided that our project "Silt in Streams and Reservoirs of Texas" should be extended to include streams of the coastal plains of Texas. Stations on the Sabine River at Logansport and on the San Jacinto River near Humble were selected as representative of the older and newer group of coastal streams. On November 27-29 O. A. Faris visited these stations and engaged men to begin daily sampling December 1.

L. T. Jessup, assisted by Lyman G. Youngs, prepared a report of work done on the Kootenai project, Idaho. This included a summary of specific yields and retention tests of Kootenai Valley soils the past year; compilation of assessed areas; summary of meteorological records and soil moisture at Kootenai Experiment Station for 1932; results from evapotranspiration experiments, 1932; variation in total soluble salts and temperature in "boils" and river; areas of various crops in each district as determined from crop map; summary of crop census data, summary of yields in each district as determined from crop samples; average dates of planting and harvesting for each district; summary of field observations on relation of yield to total dry metter.

Tests by J. C. Marr during 1931 and 1932 of eleven new pumping plants installed in wells during 1930 and 1931 for drainage and supplemental irrigation by Drainage District No. 4, Canyon County, Idaho, are yielding noteworthy results. In the greater number of tests the pumping head was less, the discharge about the same, and the efficiency lower in 1932 than in 1931. Also the pumping head during 1932 was closer to that for which the plants were designed than was the case in 1931. It is inferred from these facts that wear and tear on pumping machinery has been the principal cause of loss in efficiency.

Dean C. Muckel conferred with A. T. Mitchelson at Berkeley concerning the coming water-spreading campaign. He also inspected some of the field work being carried on by the Division in the northern part of the State.

Under the project Control of Gravel in Open Channels, L. M. Winsor spent the month of November in study of the problems of flood control in Davis and Salt Lake Counties, Utah, where for a period of ten years repeated floodings have devastated great areas of formerly highly productive and intensely settled lands. As a result of a successful campaign to utilize relief funds to further the cause of flood control in the several communities, plans were outlined and construction was begun on a number of projects.

Some experimental roller ginning studies on Pima long staple cotton have been undertaken at Sacaton, Arizona, by Chas. A. Bennett and R. G. McWhirter.

At a conference at Manhattan, Kans. attended by R. M. Merrill, O. K. Hedden, and Professors Fenton, Dean, and Parker, in regard to the burning work in apple orchards, it was decided to construct two small burners at Manhattan to be used in expediting the experimental work at Troy, Kans. The additional burners were only used one day when snow and low temperatures stopped the work. The object of this experimental burning is to determine whether or not burning is a control measure for apple curculio and to determine what type of burner will be best suited for this work.

The New England experimental farm, previously operated jointly with the Bureau of Plant Quarantine, the Bureau of Entomology, and other bureaus has been discontinued. Frank Irons reports that moving to the new eastern corn borer station at Trenton, N. J. is nearing completion.

A. L. Sharp returned to Washington on December 8 from Florida where he has been assisting with cooperative fertilizer placement experiments on snap beans. There is considerable evidence of fertilizer injury to the beans, which may be due largely to improper placement of fertilizer.

In connection with the sugar beet machinery investigations E. M. Mervine reports that in Nebraska where the plots were very deficient in phosphate the following results were obtained:- In the check plots where no fertilizer was used, the yield was 2.9 tons of sugar beets per acre. The application where fertilizer was placed 2 to 3 inches below the seed gave a yield of 13.7 tons per acre. Where the fertilizer was placed about 3 inches to the sides of the seed, the yield was 10.6 tons per acre.

John W. Randolph spent December 19 and 20 at the Washington office conferring on matters pertaining to the cotton production machinery project. He submitted his annual report wherein it was noted that the total draft requirements per row of conventional machine practices in cotton seed-bed preparation varied as follows: Alabama, Greenville fine sandy loam 370 to 3,800 pounds; Mississippi, Houston clay, 1,871 to 6,100 pounds; Mississippi Delta sandy loam, 430 to 3,100 pounds; Mississippi Delta buckshot soil 550 to 5,300 pounds. The middle buster was used in the lower range of power requirements. The moldboard plow was used in combinations requiring the maximum draft. The yield of seed cotton is not directly associated with the power put into seed bed preparation. Maximum yields of cotton were obtained with machine combinations having draft requirements about midway between the above extremes.

A paper on "Corn Picker Investigations" was presented by Claude K. Shedd at the annual meeting of the Power and Machinery Division of the A.S.A.E. at Chicago on November 28. This paper covered the results of tests on corn pickers at Ames, Iowa, during the past two years. A short paper on "Combining Soybeans in the South" was presented by R. B. Gray.

On December 13 to 16 Mr. Gray met representatives of the N.A.F.E.M. and A.S.A.E. at the offices and plants of the International Harvester Co., Chicago; J. I. Case Co., Racine; and John Deere Co., Moline. Changes in design, construction and materials which have taken place during the past two decades in farm machinery were discussed and observed. He reports that in most cases almost revolutionary changes have been made, especially noticeable when a machine built 20 years ago is placed alongside the same kind of machine made to-day.

R. M. Merrill stopped at Ames on his return from Troy, Kans., for the purpose of assisting in taking motion pictures of corn pickers in operation - a part of the corn production machinery project. It is thought that "slow motion" pictures showing corn passing through the gathering and snapping parts of the machines will be a valuable aid in studying the action of these parts and in pointing out possible improvements in design.

W. V. Hukill took part in a transportation test of six carloads of pears shipped from Medford, Ore. to New York, to determine the best methods of protecting the loads against freezing. Six methods of operating heaters and protecting against low temperatures by special insulation were tested. Data on temperature and air movement inside the cars were secured.

Wallace Ashby spent several days at Toledo with J. R. McCalmont making measurement of pressures exerted by ear corn in high corn cribs. The method of measuring pressure by the deflection of calibrated spring steel bars seems quite satisfactory.

Mr. Ashby also visited a frameless steel house at Salem, Ohio. The walls of this house are of light steel sheets crimped to give rigidity and spot-welded together. Warmth is provided by insulation nailed to the steel. Exterior finish is porcelain enameled steel shingles and interior is plastered. Floors are of crimped steel sheets, spot-welded to form continuous floor and ceiling surfaces. The floor is surfaced with wood and the ceiling with insulation board. The object of the builders was to develop a type of construction which would permit of mass-production methods, be quickly erected and meet the requirements for a satisfactory dwelling at low cost.

The Division of Plans and Service is preparing plans and specifications for two cottages and garages to be erected by the Bureau of Chemistry and Soils naval stores station at Olustee, Fla.

Our Bureau is preparing exhibits for the Century of Progress Exposition at Chicago, in 1933. One feature of the exhibit will consist of three diagrams depicting the development of agriculture during the past 100 years through the application of engineering principles to agriculture. It is the intention also to prepare exhibits representing the work of each Division of the Bureau.

A general survey of the water supply, fire protection, electrification and refrigeration equipment of the various experiment stations of the Bureau of Animal Industry is about to be undertaken by J. T. Bowen. This is expected to be followed by a complete overhauling and modernizing of such equipment as soon as funds are available.

A volume containing U. S. Geological Survey Water Supply Paper Nos. 333 and 336 is missing from the library. If you have it kindly return it.

Extracts from Report of the Secretary of Agriculture, 1932

Table 1.- Expenditures and obligations of the United States Department of Agriculture for the fiscal year 1932

Item	Amount	Percentage of total
(1) Road construction (including $188,660,236 paid to the State for Federal-aid highways)	$212,421,775	69.33
(2) Emergency relief loans	10,806,829	3.53
(3) Payments to States for support of agricultural experiment stations, extension work, and cooperative forestry activities, including fire prevention	16,040,465	5.23
(4) Ordinary activities	67,131,029	21.91
(a) Of general public interest, $36,372,082 (11.87 per cent).		
(b) Primarily for agriculture, $30,758,947 (10.04 per cent).		
(5) Total, Department of Agriculture, all purposes	$306,400,098	100.00

Note: The appropriation for our Bureau for the past fiscal year was $613,990.

Even a casual study of these figures will disclose certain important facts. I call your attention to three:

(1) Over four-fifths (81 per cent) of the 1932 expenditures of the Department of Agriculture went to the general public, rather than to agriculture. (Items 1 and 4 (a).)

(2) Of every dollar expended by the department, only 10 cents was spent or could be spent on the ordinary agricultural activities of the department. (Item 4 (b).)

(3) More than two-thirds (67 per cent) of the total was allocated to the States ($188,660,236 of item 1 and all of item 3). The department served merely as the channel through which the money passed from Congress to the States, though it shared with the States the responsibility for supervising the expenditures.

It is also apparent that the size of the department's expenditures in 1932, as in 1931, is a direct reflection of the efforts of Congress and the administration to bolster employment in a period of extreme economic distress. Expenditures of $300,000,000 a year are not normal for the Department of Agriculture. The normal total during 8 of the past 10 years has ranged between $125,000,000 and $180,000,000, including road funds.

The criticism is sometimes made that Government engages in too many activities, that it interferes with the rights and privileges of the individual. That criticism is frequently justified. I doubt, if it applies to much of the work of this department. No reasonable person would consider the building of highways, protection of the forests, protection of

the food supply, the service of the Weather Bureau unnecessarily or improperly in conflict with individual rights. In general, the guiding principle of this department, as elaborated in many legislative acts, is to undertake tasks which the individual can not do for himself, to do necessary things which would otherwise not be done.

Most of the services of the department are worth more than they cost. Congress ordered them and Congress will cancel the order if there is reasonable objection and real evidence that a service is not worth the tax burden it causes. In these days every public institution should be ready not only to spread before the public the unvarnished facts of its expenditures, but should also be ready to accept gracefully whatever economies or curtailments are necessary. This department is ready to do so. The real question is whether any particular service, such as road building or meat inspection, is necessary in an economic emergency. If there is any item not justified by its service value to the Nation as a whole, it should be cut off the program. But as the basis for judgment let us use the facts and all the facts.

Appropriations and Savings, 1933

The 1932 savings in almost every case were continued over into 1933 in the form of reduced appropriations, and constituted about one-half of the $10,000,000 reduction in the 1933 appropriations for the ordinary activities of the department. Under the economy act the amount which the department can spend for paper and for printing and binding has been reduced by approximately 40 per cent, or to $340,000 less than in 1932. Because of the economy act and the reduced appropriations, the pay-roll expenditures of the department for 1933 will be reduced, it is estimated, by more than $5,000,000. In addition, vacancies are being left unfilled wherever possible, and 166 superannuated employees were retired from the service in the first two months of the current fiscal year, making possible further savings of more than $1,000,000. The money saved by the compulsory furlough and through vacancies left unfilled is impounded and returned to the Treasury.

The regular appropriation act for the fiscal year 1933, together with so-called permanent appropriations, made $185,883,236 available for the work of this department for the year ending June 30, 1933. This is a decrease of 38.3 per cent below the appropriations charged to 1932. After the enactment of the regular agricultural appropriation bill, however, Congress passed the emergency relief and construction act, by which an additional $132,000,000 was made available through the Department of Agriculture for road construction, including $120,000,000 for advances to the States for this purpose. This money was provided for the relief of unemployment. Including these emergency funds, the total available for the fiscal year 1933 for the Department of Agriculture is $317,883,236.

Though this emergency legislation has greatly increased the funds for road construction, the funds for all other Department of Agriculture activities during 1933 have been materially reduced. Comparing 1933 appropriations with those for 1932, we find that relief loans are no longer a factor in 1933, that payments to States (exclusive of road funds)are nearly a half million dollars less than in 1932, and that appropriations for the ordinary activities of the department are smaller than the 1932 total by $10,122,694, a decrease of 14.4 per cent.